

What is claimed is:

1. A radially expandable modular stent for implantation within the body of a patient, comprising:

a first stent module defining a first passageway;

at least a second stent module defining at least a second passageway; and

a least one polymer bridge in communication with said first stent module and at least said second stent module, said polymer bridge coupling said first stent module to at least said second stent module wherein said first passageway and said at least said second passageway are in fluid communication.

2. The apparatus of claim 1 wherein said polymer bridge comprises a polymer material applied to at least one surface of said first stent module and at least said second stent module.

3. The apparatus of claim 2 wherein said polymer material is applied to an external surface of said first stent module and at least said second stent module.

4. The apparatus of claim 2 wherein said polymer material is applied to an internal surface of said first stent module and at least said second stent module.

5. The apparatus of claim 2 wherein said polymer material is applied to an internal surface and an external surface of said first stent module and at least said second stent module.

6. The apparatus of claim 2 wherein said polymer material is applied to at least said second stent module at a point of contact with said first stent module.

7. The apparatus of claim 1 wherein said polymer bridge further comprises a polymer hinge defining a gap between said first stent module and at least said second stent module.

8. The apparatus of claim 1 wherein said polymer bridge further comprises a polymer weld coupling at least said second stent module to said first stent module, wherein at least said second stent module is in contact with said first stent module.

9. The apparatus of claim 1 wherein at least one said polymer bridge manufactured from a biologically compatible polymer.

10. The apparatus of claim 9 wherein said biologically compatible polymer is selected from the group consisting of poly(L-lactic acid), polycaprolactone, poly(lactide-co-glycolide), poly(ethylene-vinyl acetate), poly(hydroxybutyrate-co-valerate), polydioxanone, polyorthoester, polyanhydride, poly(glycolic acid), poly(D,L-lactic acid), poly(glycolic acid-co-trimethylene carbonate), polyphosphoester, polyphosphoester urethane, poly(amino acids), cyanoacrylates, poly(trimethylene carbonate), poly(iminocarbonate), copoly(ether-esters), polyalkylene oxalates, polyphosphazenes, biomolecules, fibrin, fibrinogen, cellulose, starch, collagen, hyaluronic acid, polyurethanes, silicones, polyesters, polyolefins, polyisobutylene, ethylene-alphaolefin copolymers, acrylic polymers, acrylic copolymers, ethylene-co-vinylacetate, polybutylmethacrylate, vinyl halide polymers, vinyl halide copolymers, polyvinyl chloride, polyvinyl ethers, polyvinyl methyl ether, polyvinylidene halides, polyvinylidene fluoride, polyvinylidene chloride, polyacrylonitrile, polyvinyl ketones, polyvinyl aromatics, polystyrene, polyvinyl esters, polyvinyl acetate, copolymers of vinyl monomers, ethylene-methyl methacrylate copolymers, acrylonitrile-styrene copolymers, ABS resins, ethylene-vinyl acetate copolymers, polyamides, Nylon 66, polycaprolactam, alkyd resins, polycarbonates, polyoxymethylenes, polyimides, polyethers, epoxy resins, polyurethanes, rayon, rayon-triacetate, cellulose, cellulose acetate, cellulose butyrate, cellulose acetate butyrate, cellophane, cellulose nitrate, cellulose propionate, cellulose ethers, and carboxymethyl cellulose.

11. The apparatus of claim 1 wherein said polymer bridge is biologically degradable.

12. The apparatus of claim 1 wherein at least one of said first stent module, said second stent module, and said polymer bridge includes at least one therapeutic agent selected from the group consisting of polytetrafluoroethylene, anti-thrombotic agents, platelet-derived growth factor (PDGF), transforming growth factor-beta (TGF-beta), heparin, anti-inflammatory agents, anti-proliferation agents, rapamycin, angiopeptin, methotrexate, paclitaxel, anti-microbial agents, anti-metabolic agents, anti-platelet agents, anti-coagulant agents, Nitric Oxide releasing agents, chaperone inhibitors, geldanamycin, glitazones, metalloproteinase inhibitors (MMPI), antisense polynucleotides, and transforming nucleotides.

13. The apparatus of claim 1 wherein at least one of said first stent module, said second stent module, and said polymer bridge includes at least one radio-opaque or echogenic material.

14. The apparatus of claim 1 wherein at least one of said first module and at least said second stent module is manufactured from at least one material selected from the group consisting of stainless steel, tantalum, titanium, Nickel-Titanium alloys, shape memory alloys, super elastic alloys, low-modulus Ti-Nb-Zr alloys, cobalt-nickel alloy steel (MP-35N), biologically compatible polymers, and biologically compatible elastomers.

15. The apparatus of claim 1 wherein at least one of said first module and at least said second stent module is porous.

16. The apparatus of claim 1 wherein at least one of said first module and at least said second stent module is non-porous.

17. A radially expandable modular stent for implantation within the body of a patient, comprising:

a first stent module defining a first passageway;

at least a second stent module defining at least a second passageway; and

at least one polymer bridge coating said first stent module and at least said second stent module, said polymer bridge coupling said first stent module to at least said second stent module wherein said first passageway and said at least said second passageway are in fluid communication.

18. A radially expandable modular stent for implantation within the body of a patient, comprising:

a first stent module defining a first passageway;

at least a second stent module defining at least a second passageway; and

a least one polymer bridge positioned at a point of contact of said first stent module and at least said second stent module, said polymer bridge coupling said first stent module to at least said second stent module wherein said first passageway and said at least said second passageway are in fluid communication.

19. A method of making a radially expandable modular stent, comprising:

forming a first stent module from at least one stent material;

forming at least a second stent module from said at least one stent material; and

coupling at least said second stent module to said first stent module with a polymer bridge.

20. The method of claim 19 wherein further comprising coating at least one surface of said first stent module and at least said second stent module with a polymer material to form said polymer bridge.

21. The method of claim 20 further comprising coating an external surface of said first stent module and at least said second stent module with a polymer material to form said polymer bridge.

22. The method of claim 20 further comprising coating an internal surface of said first stent module and at least said second stent module with a polymer material to form said polymer bridge.

23. The method of claim 20 further comprising coating an external surface and an internal surface of said first stent module and at least said second stent module with a polymer material to form said polymer bridge.

24. The method of claim 19 further comprising applying a polymer material to at least said second stent module and to said first stent module at a location wherein said second stent module contacts said first stent module.

25. The method of claim 19 wherein said polymer bridge is applied to said first stent module and at least said second stent module by at least one process selected from the group consisting of dipping, spraying, and vapor deposition.

26. The method of claim 19 further comprising applying at least one therapeutic agent to at least said first stent module, said second stent module, and said polymer coating.

27. The method of claim 27 further coating at least one of said first stent module, said second stent module with at least one therapeutic agent selected from the group consisting of anti-thrombotic agents, platelet-derived growth factor (PDGF), transforming growth factor-beta (TOF-beta), heparin, anti-inflammatory agents, anti-proliferation agents, rapamycin, angiopeptin, methotrexate, paclitaxel, anti-microbial agents, anti-metabolic agents, anti-platelet agents, anti-coagulant agents, Nitric Oxide releasing agents, chaperone inhibitors, geldanamycin, glitazones, metalloproteinase inhibitors (MMPI), antisense polynucleotides, and transforming nucleotides.

28. A vascular device a plurality of stent modules comprising:

a first stent module defining a first passageway;

at least a second stent module defining at least a second passageway; and

a least one bridge comprising a first polymer in communication with said first stent module and at least said second stent module;

a coating comprising a second polymer covering said plurality of stent modules wherein said first and said second polymer include at least one drug.

29. The vascular device according to claim 28 wherein said first and second polymer are the same polymer.

30. The vascular device according to claim 28 wherein said first and second polymer are different polymers.

31. The vascular device according to any one of claims 28 through 30 wherein said drug is selected from the group consisting of paclitaxel, docetaxel and derivatives, epothilones, nitric oxide release agents, heparin, aspirin, coumadin, D-phenylalanyl-prolyl-arginine chloromethylketone (PPACK), hirudin, polypeptide from angiostatin and endostatin, benzoquinone ansamycins including geldanamycin, herbimycin and macbecin, methotrexate, 5-fluorouracil, estradiol, P-selectin Glycoprotein ligand-1 chimera, abciximab, exochelin, eleutherobin and sarcodictyin, fludarabine, sirolimus, rapamycin, ABT-578, certican, Sulindac, tranilast, thiazolidinediones including rosiglitazone, troglitazone, pioglitazone, darglitazone and englitazone, tetracyclines, VEGF, transforming growth factor (TGF)-beta, insulin-like growth factor (IGF), platelet derived growth factor (PDGF), fibroblast growth factor (FGF), RGD peptide, estrogens including 17 beta-estradiol and beta or gamma ray emitter (radioactive) agents, vasodilators such as nitric oxide (NO),

various marking agents including radio-opaque or echogenic materials and combinations thereof.